

Service Manual

C123

ORDER NO. TD89060343C2

FM/AM/FM Stereo Radio

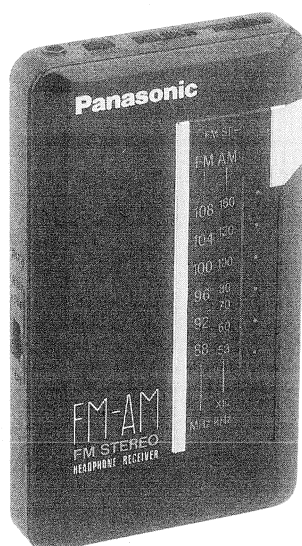
Radio
RF-423

Color

(K)..... Black Type

Area

| Country Code | Areas | Color |
|--------------|--------------------------|-------|
| [Z] | Continental Europe. | (K) |
| [ZG] | F. R. Germany and Italy. | |
| [ZY] | Spain and Greece | |



■ SPECIFICATIONS

Power Requirement: DC 3V; Two UM-4
(Panasonic R03/LR03 batteries)

Frequency Range: FM 87.5~108MHz
AM 520~1610kHz (577~186m)

Intermediate Frequency: FM 10.7MHz
AM [Z]/[ZY]...459kHz
[ZG].....455kHz

Sensitivity: FM 4.5 μ V for 1mW Output
(-3dB, Limit, Sens.)
AM 200 μ V/m for 1mW Output

Power Output: 40mW (20mW \times 2) RMS. Max

Dimensions: 62(W) \times 109(H) \times 18(D)mm

Weight: 123g Without Batteries

Impedance: Headphone Jack.....32 Ω (ϕ 3.5)

● Featherweight Stereo Innerphones

Input: 4mW (Max. 40mW)

Impedance: 16 Ω

Connection Cord: 110cm

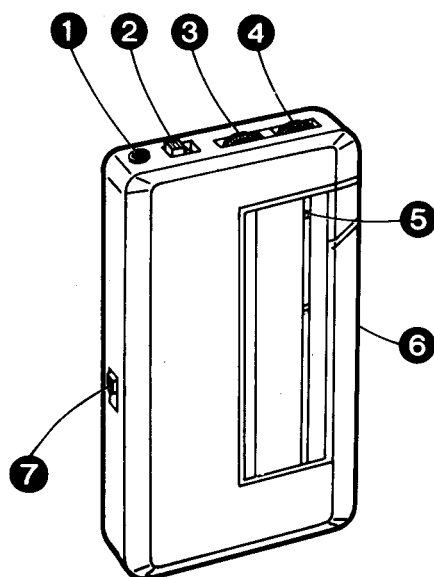
Weight: 14.5g with cord

Design and specifications are subject to change without notice.

Panasonic

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

LOCATION OF CONTROLS



- ① Headphone Jack (ϕ) $\phi 3.5, 32\Omega$
- ② Power Switch (POWER)
- ③ Volume Control (VOLUME)
- ④ Tuning Control (TUNING)
- ⑤ FM Stereo Indicator (FM ST)
- ⑥ Battery Compartment [Back]
- ⑦ Band Selector (BAND)

DISASSEMBLY INSTRUCTIONS

■ Removal of the Front Cabinet

1. Remove the Front Cabinet in the direction of arrow (1). (Fig. 1)
2. To prevent damaging of cover is necessary to place a piece of cloth under screwdriver.

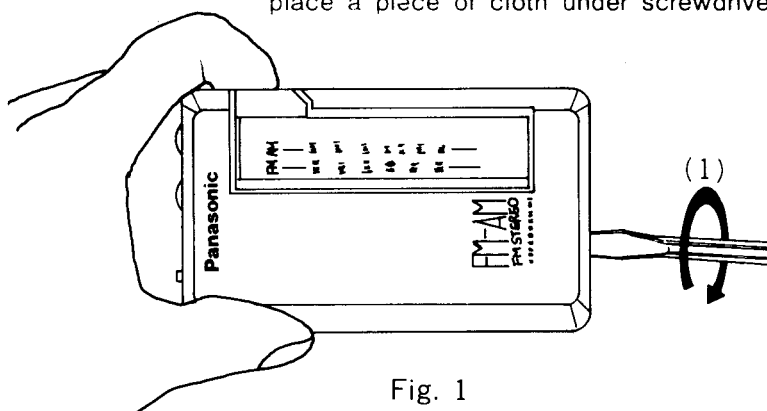


Fig. 1

■ Removal of the PC. Board

1. Pull out the PC Board with driver, in the direction of arrow (2) as shown in (Fig. 2)
2. Remove the PC. Board in the direction of arrow (3) as shown in (Fig. 3)

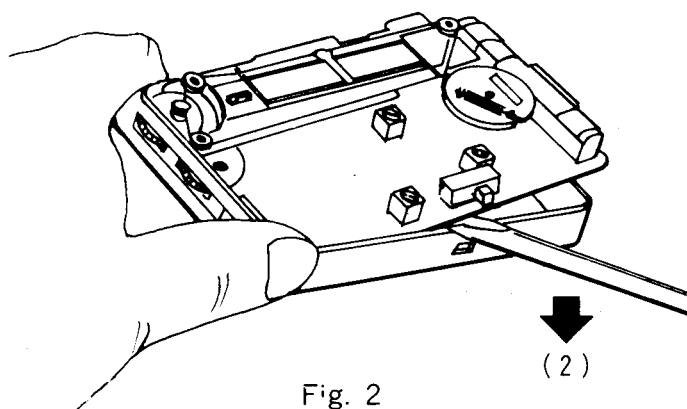


Fig. 2

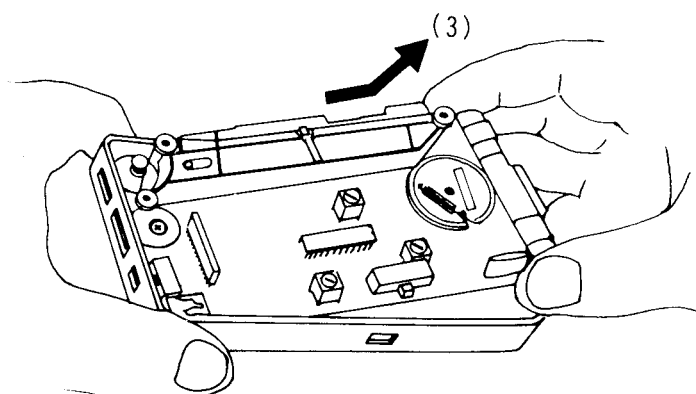


Fig. 3

MEASUREMENTS AND ADJUSTMENTS

ALIGNMENT INSTRUCTIONS

| READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT | | | | | |
|--|--|---|---|--|--|
| Notes: 1. Set volume control to maximum. 2. Set band switch to AM or FMST. 2. Set power switch to ON. 4. Set power source voltage to 3 volts DC. 5. Output of signal generator should be no higher than necessary to obtain an output reading. | | | | | |
| SIGNAL GENERATOR or SWEEP GENERATOR | | RADIO DIAL SETTING (DISTANCE) | INDICATOR (ELECTRONIC VOLTMETER or SCOPE) | ADJUSTMENT | REMARKS |
| CONNECTIONS | FREQUENCY | | | | |
| AM-IF & RF ALIGNMENT | | | | | |
| (1) | Fashion a loop of, Several turns of wire and radiate signal into loop of receiver. | 459kHz (455kHz[ZG]only) 30% Mod. at 400Hz | Point of non-interference. (on/about 600 kHz) | Headphones Jack (32Ω) (Fabricate the plug as shown in Fig. 9, and then connect the lead wires of the plug to the measuring instrument.) | T2 (AM 1st IFT) Adjust for maximum output. |
| (2) | " | 511 kHz (514kHz...[ZG] only)(f.min) | Tuning capacitor fully closed. | " | L4 (AM OSC Coil) " |
| (3) | " | 1650kHz (1633kHz...[ZG] only)(f. Max) | Tuning capacitor fully open. | " | CT3 (AM OSC Trimmer) " |
| (4) | " | 550 kHz | Tune to signal. | " | (*1)L3 (AM ANT Coil) Adjust for maximum output. Adjust L3 by moving coil along ferrite core. |
| (5) | " | 1500 kHz | Tune to signal. | " | CT4 (AM ANT Trimmer) Adjust for maximum output. Repeat steps (2)~(5) |
| (*1) Fix antenna coil with wax after completing alignment. | | | | | |
| FM-IF ALIGNMENT | | | | | |
| (6) | High side thru. 0.001μF to point ▼ Negative side to point ▼ | 10.7 MHz | Point of non-interference. (on/about 90 MHz). | Connect vert. amp. of scope to point ▼ Negative side to point ▼ | T1 (FM 1st IFT) Adjust for maximum amplitude. (Refer to fig. 4). |
| (7) | " | " | " | " | T3 (FM 2nd IFT) Adjust for maximum amplitude. (Refer to fig. 5). |
| FM-RF ALIGNMENT | | | | | |
| (8) | Connect point ▼ through FM dummy antenna Negative side to point ▼ (Refer to fig. 6.) | 86.2MHz 87.3MHz...[ZG] only)(f.min) | Tuning capacitor fully closed. | Headphones Jack (32Ω) (Fabricate the plug as shown in Fig. 9, and then connect the lead wires of the plug to the measuring instrument.) | L2 (FM OSC Coil) (*2) Adjust for maximum output. |
| (9) | " | 109.2MHz (108.3MHz...[ZG] only)(f. Max) | Tuning capacitor fully open. | " | CT1 (FM OSC Trimmer) " |
| (10) | " | 90 MHz | Tune to signal. | " | L1 (FM ANT Coil) " |
| (11) | " | 106 MHz | Tune to signal. | " | CT2 (FM ANT Trimmer) Adjust for maximum output. Repeat steps (8)~(11). |
| (*2) Three output responses will be present; proper tuning is the center frequency. | | | | | |

SEPARATION ALIGNMENT

| ITEM | FM SIGNAL GENERATOR SOURCE CONNECTION | EQUIPMENT CONNECTION ELECTRONIC COUNTER | ADJUSTMENT | SPECIFICATON | REMARKS |
|-----------------------------|---|---|------------|--------------|--|
| Adjustment of pilot signal. | 90 MHz, 60 dB Connect to test point ▼ through FM dummy antenna. Negative side to test point ▼ | ▼...(+)side ▼...(-)side | VR1 | 19 kHz | Adjust VR1 for 19 kHz (±150Hz) reading on electronics counter. |

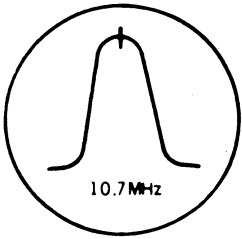


Fig. 4

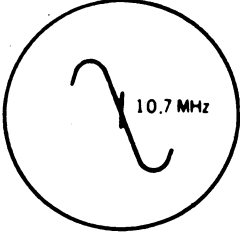


Fig. 5

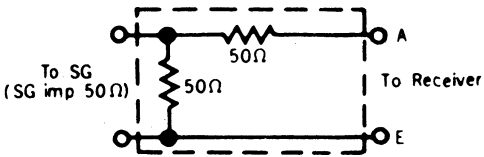


Fig. 6

ALIGNMENT POINTS

- Please refer to the Circuit Board and Wiring Connection Diagram to locate the test points.

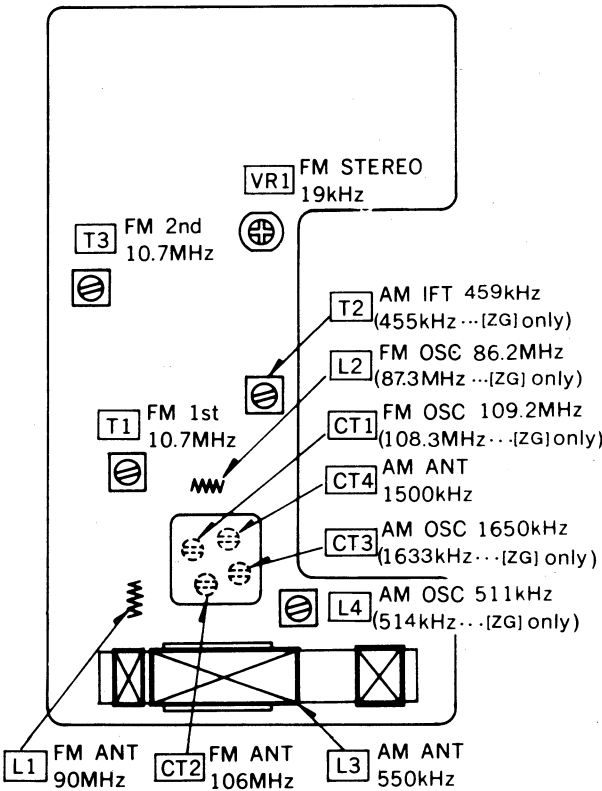


Fig. 7

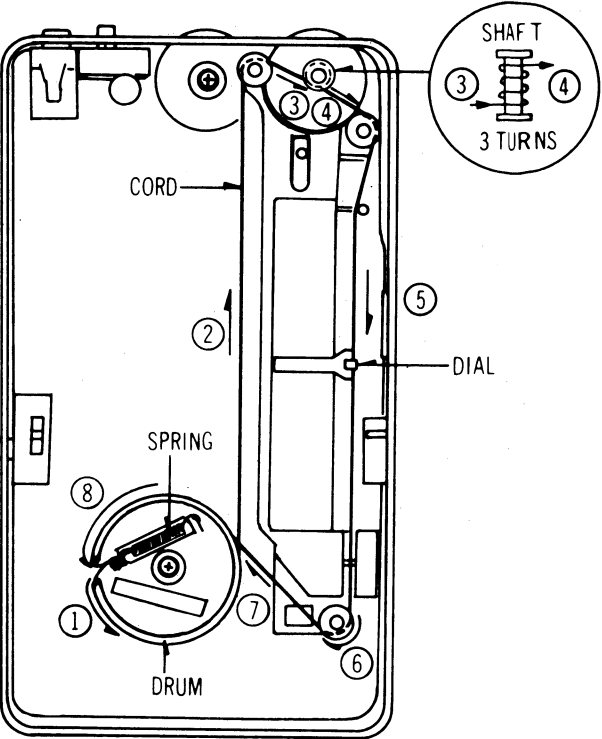


Fig. 8

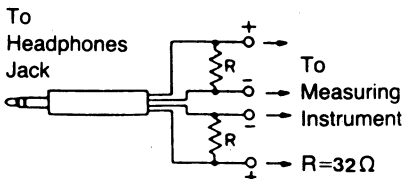
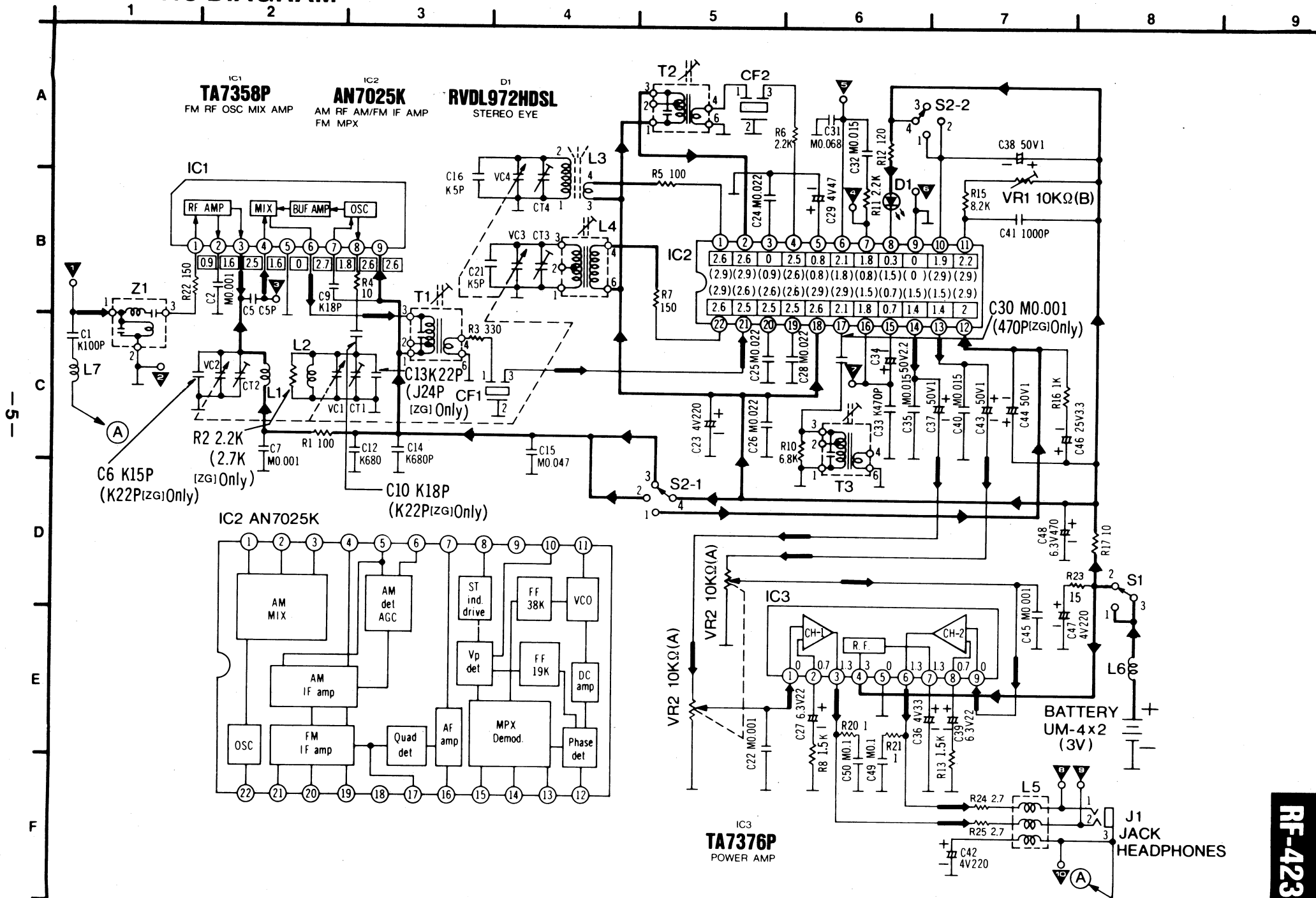
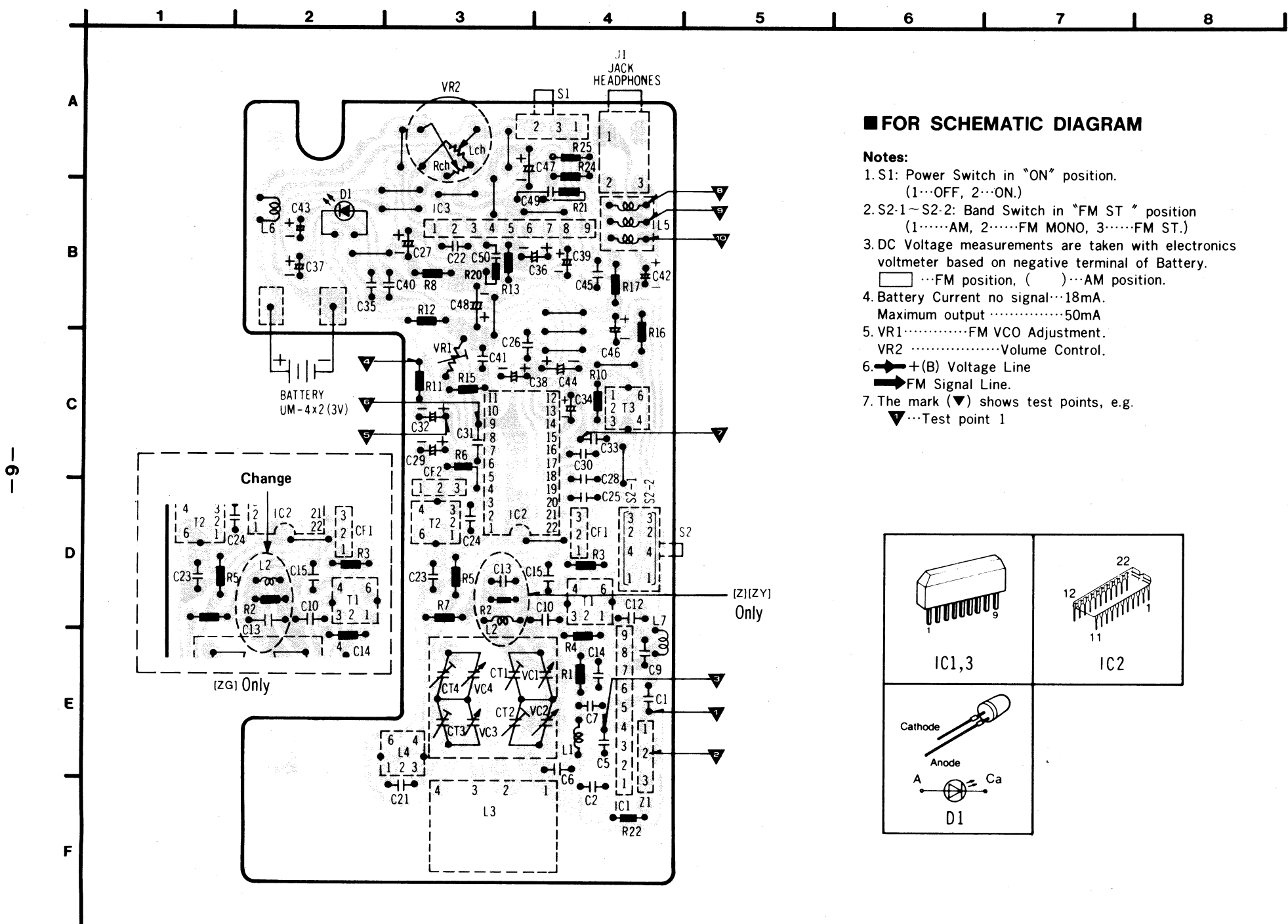


Fig. 9

SCHEMATIC DIAGRAM



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



RF-423 RF-423

RESISTORS & CAPACITORS PARTS LIST

Numbering System of Resistor

Example:

| | | | | |
|------|-------------------|-------|-----------|--------------------------|
| ERD | 25 | F | J | 102 |
| Type | Wattage (1/4W) | Shape | Tolerance | Value (1K Ω) |
| ERX | 2 | AN | J | 471 |
| Type | Wattage (2W) | Shape | Tolerance | Value (470 Ω) |

Numbering System of Capacitor

Example:

| | | | | |
|------|------------------|--------------------------|-----------------------|-------------|
| ECKD | 1H | 102 | Z | F |
| Type | Voltage (50V) | Value (0.001 μ F) | Tolerance | Peculiarity |
| ECEA | 50 | M | 330 | |
| Type | Voltage (50V) | Peculiarity | Value (33 μ F) | |

※ Capacity is stated in microfarads (μ F) unless specified otherwise, P=Pico-farads.

※ Resistance is stated in ohms (Ω), unless specified otherwise, 1K=1,000 Ω , 1M=1,000K Ω

| Resistor Type | Wattage | | Tolerance |
|-----------------------------------|------------|-----------|----------------|
| ERD : Carbon | 10 : 1/8W | 12 : 1/2W | J : $\pm 5\%$ |
| ERG : Metal Oxide | 14 : 1/4W | 25 : 1/4W | F : $\pm 1\%$ |
| ERQ : Fuse Type Metal | 1A : 1W | 18 : 1/8W | G : $\pm 2\%$ |
| ERX : Metal Film | S2 : 1/4W | S1 : 1/2W | J : $\pm 5\%$ |
| ERD L : Carbon (chip) | 2F : 1/4W | 50 : 1/2W | K : $\pm 10\%$ |
| ERO K : Metal Film (chip) | 2A : 2W | 3A : 3W | M : $\pm 20\%$ |
| ERC : Solid | 6G : 1/10W | 8G : 1/8W | |
| ERF : Incombustible Box-Shaped | | | |
| ERM : Wire-Wound | | | |
| RRJ : Cip Resistor | | | |
| ERJ : Cip Resistor | | | |

| Capacitor Type | Voltage | | Tolerance |
|---|--------------|-----------|---------------------|
| ECE : Electrolytic | 0J : 6.3V | 1A : 10V | K : $\pm 10\%$ |
| ECCD : Ceramic | 1C : 16V | 1E : 25V | M : $\pm 20\%$ |
| ECKD : Ceramic Capacitor | 1H : 50V | 1V : 35V | Z : $\pm 80\%$ |
| ECQM : Polyester | 50 : 50V | 05 : 50V | -20 |
| ECQP : Polypropylene | 2H : 500V | 2A : 100V | J : $\pm 5\%$ |
| ECG : Ceramic | 1 : 100V | 1J : 63V | G : $\pm 2\%$ |
| ECEA N : Non Polar Electrolytic | KC : 400V AC | | F : $\pm 1\%$ |
| QCU : Ceramic (Chip Type) | KC : 125V AC | | C : $\pm 0.25\mu$ F |
| ECUX : Ceramic (Chip Type) | (UL) | | D : $\pm 0.5\mu$ F |
| ECF : Semiconductor | | | |
| EECW : Liquid electrolyte double layer capacitor | | | |

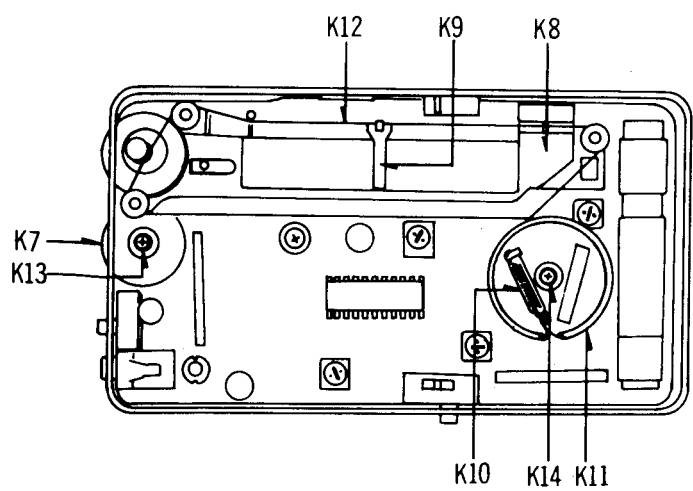
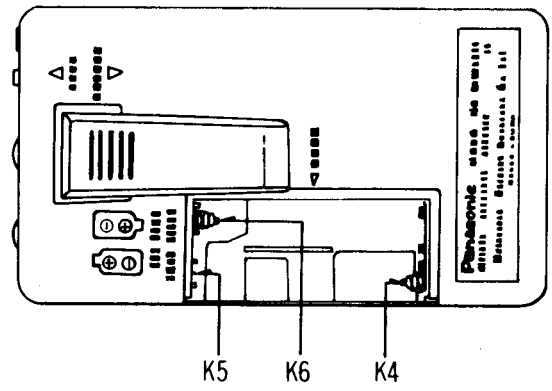
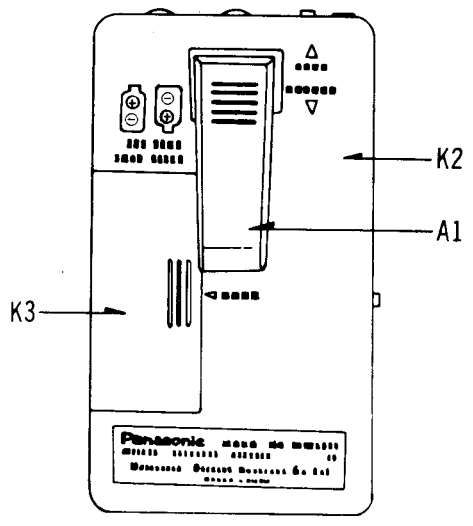
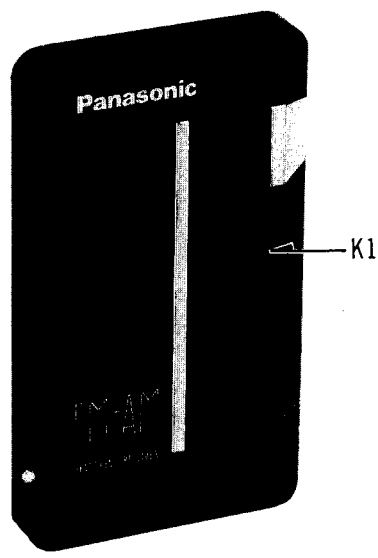
REPLACEMENT PARTS LIST

☐ Indicates parts supplied by TAMACO.

| Ref. No. | Parts No. | Parts Name & Description |
|--|--------------|---|
| INTEGRATED CIRCUITS, AND DIODES | | |
| IC1 | RVITA7358P | IC FM RF AMP |
| IC2☐ | AN7025K | IC AM RF/FM AMP |
| IC3 | TA7376P | IC Power AMP |
| D1☐ | RVDL972HDSL | Diode |
| COILS AND TRANSFORMERS | | |
| L1☐[Z][ZY] | RL04Y150-L | Antenna Coil FM |
| L1☐[ZG] | RL04Y15 | Antenna Coil FM |
| L2☐[Z][ZY] | RL04Y19-2 | Oscillator FM |
| L2☐[ZG] | RL04N221 | Oscillator FM |
| L3☐ | RLF2Y55 | Antenna Coil AM |
| L4☐ | RL02A25 | Oscillator Coil AM |
| L5☐ | RL0U100K | Choke Coil |
| L6☐ | RLQZF100KV | Choke Coil |
| L7☐ | RLQY50S5-0 | Choke Coil |
| T1,3☐ | RLI4A34 | IFT, FM |
| T2☐ | RLI2A42 | IFT, AM |
| VARIABLE RESISTOR | | |
| VR1 | RVNCA14B4-L | V. R. FM VCO |
| VR2☐ | RVV2H3A14 | V. R. Volume Control |
| VARIABLE CAPACITOR | | |
| VC1-4☐ | RCV4LC4Q1Q | Tuning Capacitor, W/Trimmer Capacitor (CT1~4) |
| CERAMIC FILTER | | |
| CF1☐ | RVFSFE107MAZ | Ceramic Filter |
| CF2☐ | RVFSFU459B | Ceramic Filter (AM) |
| COMPONENT COMBINATION | | |
| Z1 | EXCFF76108LM | Band Pass Filter |
| SWITCHES | | |
| S1☐ | RSS2A32WA-Q | Power Switch |
| S2☐ | RSS3B35Y | Band Switch |
| JACK | | |
| J1 | RJJD3S5Z | Headphone Jack |

| Ref. No. | Parts No. | Ref. No. | Parts No. |
|------------------|------------|------------------|--------------|
| RESISTORS | | CAPACITOR | |
| R1,5 | ERDS2TJ101 | C1 | ECCD1H101K |
| R2[Z][ZY] | ERDS2TJ222 | C2,7,22, | ECKD1H102MD |
| R2[ZG] | ERDS2TJ272 | 45 | |
| R3 | ERDS2TJ331 | C5,21 | ECCD1H050CC |
| R4,17 | ERDS2TJ100 | C6[Z][ZY] | ECCD1H150KC |
| R6 | ERD10EJ222 | C6,10[ZG] | ECCD1H220KC |
| R7,22 | ERDS2TJ151 | C9 | ECCD1H180KB |
| R10 | ERDS2TJ682 | C10[Z][ZY] | ECCD1H180KB |
| R11 | ERDS2TJ222 | C12,14 | ECKD1H681KB |
| R12 | ERDS2TJ121 | C13[Z][ZY] | ECCD1H220KC |
| | | C13[ZG] | ECCD1H240JR |
| R8,13 | ERDS2TJ152 | C15 | ECFZ1C473MDY |
| R15 | ERDS2TJ822 | C23,42,47 | ECEA0GK221 |
| R16 | ERDS2TJ102 | C24,25 | ECFZ1C223MDY |
| R20,21 | ERDS2TJ1R0 | 26,28 | |
| R23 | ERDS2TJ150 | C27,39 | ECEA0JK220 |
| R24,25 | ERDS2TJ2R7 | C29 | ECEA0GK470 |
| | | C30[Z][ZY] | ECKD1H102MD |
| | | C30[ZG] | ECKD1H471KB |
| | | C31 | ECFZD683MD |
| | | C32,35,40 | ECFZ1C153MD |
| | | C33 | ECKD1H471KB |
| | | C34 | ECEA1HK22R2 |
| | | C36 | ECEA0GK330 |
| | | C37,38, | ECEA1HK010 |
| | | 43,44 | |
| | | C41 | ECQS05102KZ |
| | | C46 | ECEA1EK3R3 |
| | | C47 | ECEA0GKA471 |
| | | C48 | ECEA0JU471 |
| | | C49,50 | ECFD1C104MD |

CABINET AND ELECTRICAL PARTS LOCATION



REPLACEMENT PARTS LIST

☐ Indicates parts supplied by TAMACO.

| Ref. No. | Parts No. | Parts Name & Description |
|--------------------------|-------------|--------------------------|
| CABINET PARTS | | |
| K1☐ | RKM264TZA | Front Cabinet |
| K2☐ | RKF260TZA | Rear Cabinet |
| K3☐ | RKK215TZ | Battery Cover |
| K4☐ | RJC250TZ | Battery Terminal(+ · -) |
| K5☐ | RJC251TZ | Battery Terminal(+) |
| K6☐ | RJC252TZ | Battery Terminal(-) |
| K7☐ | RBT220TZA-O | Knob, Volume |
| K8☐ | RZAR423MKT | Dial Chassis Ass'y |
| K9☐ | RDP233TZ | Pointer |
| K10☐ | RDS205TZ | Dial Spring |
| K11☐ | RDD210TZ | Dial Drum |
| K12☐ | RDZ03TZA | Dial Cord |
| K13☐ | XSH14+3 | Screw (VR) |
| K14☐ | XSH17+2 | Screw |
| ACCESSORIES | | |
| A1☐ | RKH207TZ | Belt Clipper |
| A2☐ | RPHV129JR | Innerphones Phone |
| A3☐ | RQX751TZ | Instruction Manual |
| PACKING MATERIALS | | |
| P1☐ | RPK471TZ | Carton Box |
| P2☐ | RPN1304TZ | Polylon |
| P3☐ | RPN1337TZ | Pad |
| P4☐ | RPP343TZA | Polyethylene Cover |